

Abstract of the Disclosure

A magnetic storage element capable of recording with a small magnetic field and retaining information stably and a recording method thereof, and a magnetic storage device having the magnetic storage element and capable of simplifying a drive circuit thereof are provided. The magnetic storage element comprises a storage layer, a non-magnetic layer and a pinned layer. The storage layer is composed of directly stacked first magnetic layer mainly composed of a transition metal and second magnetic layer mainly composed of a rare-earth metal; and a magnetization amount of the first magnetic layer is smaller than that of the second magnetic layer at a room temperature. A magnetization state of one direction is recorded by heating and applying a magnetic field to the storage layer, and a magnetization state of the other direction is recorded by making magnetic coupling work between the first magnetic layer and the pinned layer by heating.